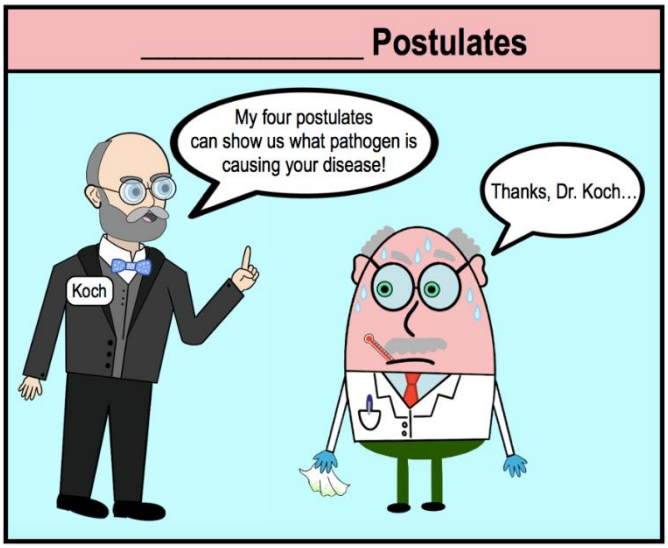
CONCEPT: KOCH'S POSTULATES

●Robert Koch was a German physician who designed a set of postulates to identify microbes that cause certain diseases.

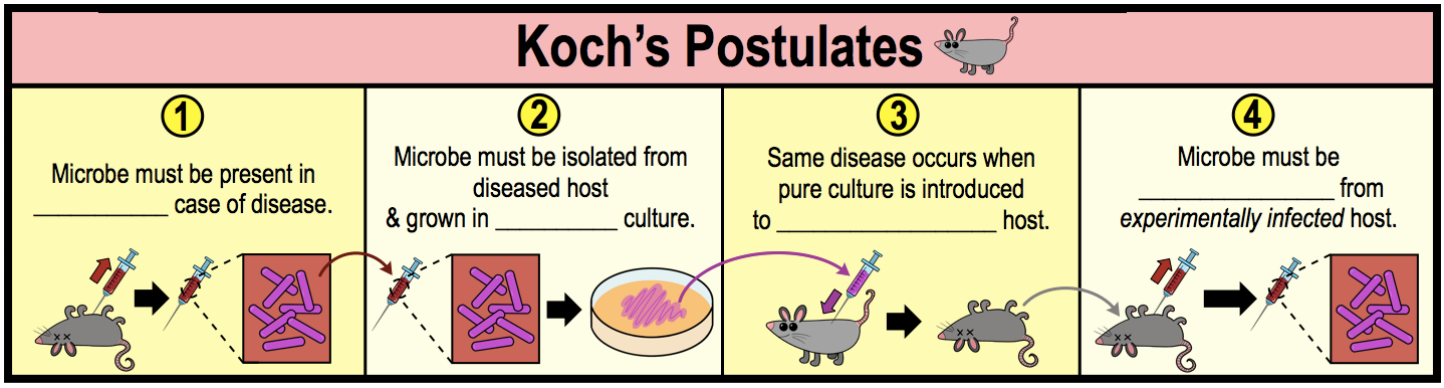
□ Using his postulates, he discovered _____ (disease in cattle & humans) is caused by *Bacillus anthracis.*

□ _____ **Postulates:** set of criteria used to determine if a *particular* microbe causes a *particular* disease**.**



The 4 Koch's Postulates

●There are _____ postulates used to link a specific microbe to a specific disease:



PRACTICE: Chronic wasting disease (CWD) in deer, elk, and moose is caused by a prion. Which of Koch's postulates would not work in regards to identifying the cause of CWD?

a) Postulate 1. b) Postulate 2. c) Postulate 3. d) Postulate 4.

PRACTICE: Koch stressed the importance of working with _____ to formulate his postulates of disease.

a) Anaerobic culture. c) Pure culture. e) Abstract culture.

b) Enriched culture. d) Mixed culture.

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PRACTICE: Koch's postulates established:

a) Evidence against the idea of spontaneous generation of life.

b) That bacterial cells are the fundamental units of all life.

c) That specific diseases are caused by specific pathogens.

d) That virulence factors are the characteristics of pathogens which cause disease.

PRACTICE: Which of the following is ***not*** one of Koch's postulates?

a) The same pathogen must be present in every single case of the disease.

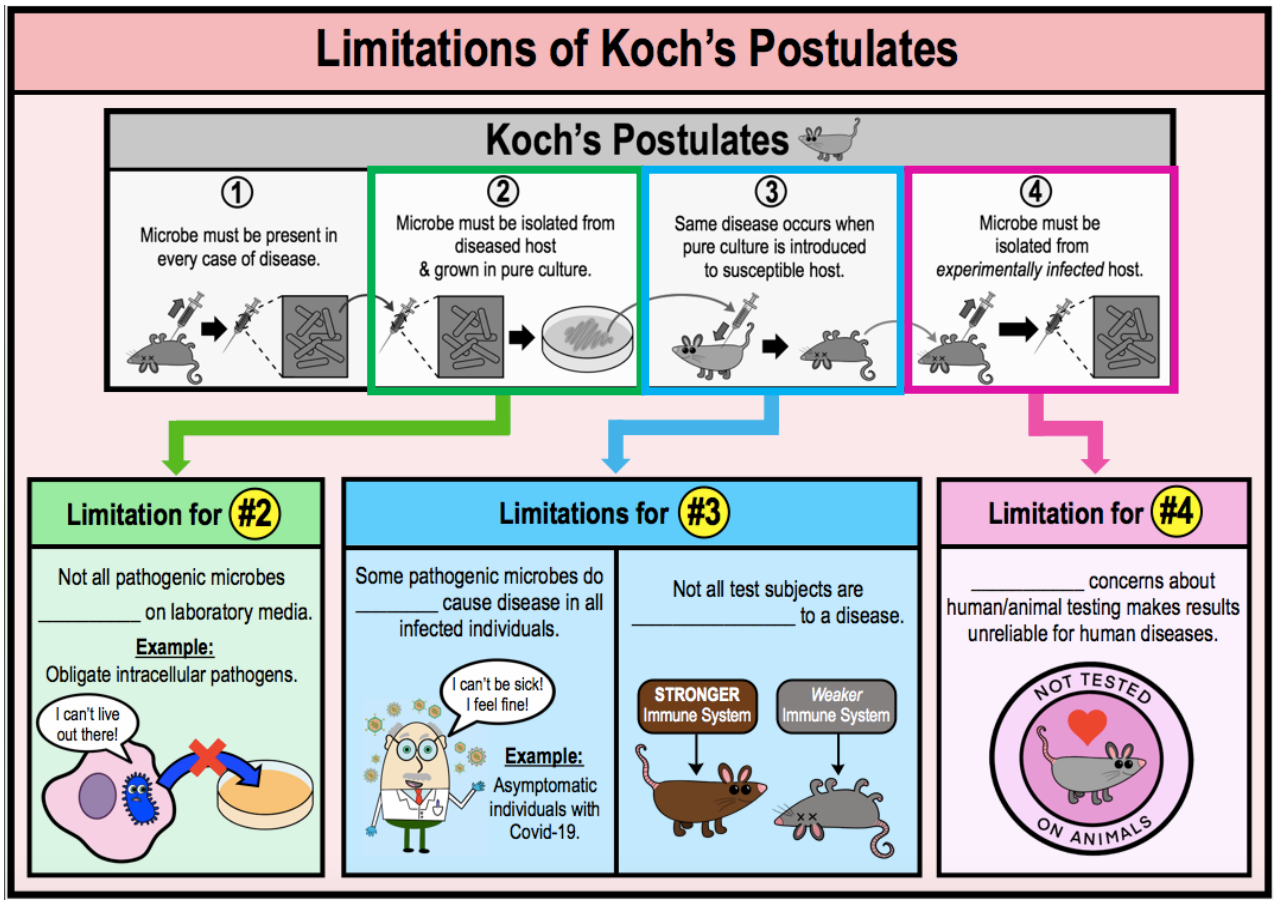
b) The pathogen from pure culture must cause the disease when inoculated into a healthy, susceptible test subject.

c) The pathogen must be isolated and grown in pure culture from diseased test subject.

d) The disease must be transmitted from a diseased test subject to a susceptible test subject via direct contact.

Limitations to Koch's Postulates

●While Koch's postulates serve an important role in determining the cause of disease, there are limitations to them.



CONCEPT: KOCH'S POSTULATES

PRACTICE: Which of the following would Koch's postulates not be able to explain?

a) Diseases caused by viruses.
b) Diseases with asymptomatic carriers.
c) Diseases that have long latency (dormant) periods after infection.
d) All of the above.

PRACTICE: In two of Koch's postulates (#2 and #3), a pure culture of the pathogen is required. Which of the following would ***not*** be a possible consequence of using a contaminated culture?

a) The disease cannot be attributed to a single microbe since the culture is contaminated with other microbes.
b) The contaminating microbe may also cause disease in the test subject in addition to the microbe of interest.
c) The contaminating microbe might outcompete the microbe of interest for nutrients, killing to microbe of interest.
d) Even with a contaminant present, if the microbe of interest is present, it should infect the test animal.

PRACTICE: Why would Koch's postulates not be able to identify that the SARS-CoV-2 virus causes the Covid-19 disease?

a) Some individuals infected with SARS-CoV-2 do not show symptoms.
b) The SARS-CoV-2 virus is not present in all cases of Covid-19.
c) Viruses cannot be cultured on laboratory media.
d) Some individuals have weaker immune systems and are more susceptible to the SARS-CoV-2 virus.
e) A and B.
f) A, C, and D.
g) C and D.